velocity in the upper and lower paths, which would be indicated by a displacement of the fringes. No such displacement is observed, and hence we must conclude that either the ether is absolutely at rest everywhere, or that the earth drags it with it up to many thousand miles from the surface, or, lastly, that the length of all bodies is altered by their motion through the ether.

Bulletin of the American Mathematical Society, May.—Systems of continuous and discontinuous simple groups, by Dr. L. E. Dickson (read at the April meeting of the Society). This paper is in continuation of some results announced at the Buffalo meeting (August 31, 1896), and consists of four sections. § 1 enumerates the known systems of discontinuous simple groups; § 2 the systems of finite continuous transformation groups which are simple; § 3 gives an elementary deduction of certain groups in § 2, viz. the groups in the $l(2l+1)$ parameters, isomorphic with the general projective group of a linear complex in R_{2l-1}, and a proof of their simplicity; § 4 discusses the semi-simple linear homogeneous groups whose defining function is the sum of n determinants of order $q>2$. The contents of §§ 3, 4 were presented by Prof. Lie (February 19) to his class, and he stated that "the interesting result of § 4 was new, and not what one would have expected."—On the number of roots of the hypergeometric series between zero and one by Mr. M. B. Porter (read at the March meeting). Klein's solution was published in 1890 (*Math. Ann.*, vol. xxxvii.). Solutions by Hurwitz and Gegenbauer are given in the *Math. Ann.* (vol. xxxviii.) and the *Wiener Sitzungsberichte* (vol. c.^{2a}) respectively. The object of the present paper is to apply two theorems of Sturm (*Liouville's Journal*, vol. i.) to the solution of the problem.—Another paper, read at the March meeting, is by Prof. J. Pierpont on modular functions. This treats the subject from the point of view of H. Weber's Memoir, zur theorie der Elliptischen Functionen (*Acta Math.*, vol. vi. p. 329; *cf.* also his Elliptische Functionen und Algebraische Zahlen, 1891).—In the Notes are given the mathematical courses for the summer session at the Universities of Chicago, Leipzig, and Munich.

Bulletin de la Société des Naturalistes de Moscou, 1896, No. 1.—Contributions to the knowledge of the Urticaceæ and the Moraceæ, by M. Golenkin, with one plate. The inflorescence and the disposition of leaves are treated in this second instalment (in German).—A preliminary catalogue of the Lepidoptera of the province of Kazan, by L. Krulikovski, continued (in Russian).—Study of the embryonal development of *Gammarus pulex*, by Marie Rossyskaia-Kojevnikova, with one plate (in French).—Materials for the mycological fauna of the province of Smolensk, by A. Jaczewski (in French). The author has found in that province 550 species of fungi, out of which 408 are new for that region, and he gives the list of these species.—On the structure, function and evolution of the Nematocysts of Cœlenterata, by N. Iwanzoff, with four plates (in German). An elaborate work, made at the zoological laboratories of Naples and Villefranche, to be continued.—On the rotation of the earth, supposed to be fluid in its interior, by Prof. Th. Sloudsky, being a purely mathematical inquiry, continued from a previous number.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, May 13.—"A Dynamical Theory of the Electric and Luminiferous Medium. Part III. Relations with Material Media." By Joseph Larmor, F.R.S., Fellow of St. John's College, Cambridge. Received April 21.

This series of papers is mainly concerned with the development of electrical and optical theory on the basis that electricity is constituted of discrete atomic charges or electrons. It has been shown in the previous papers that the facts of electrodynamics require this hypothesis and are consistent with it. The hypothesis was arrived at from the point of view of the properties of the æther, the conception of the electron as a permanent strain-centre being a necessary feature of a theory of an elastic æther. This idea is here developed and illustrated by aid of a specification, on Lord Kelvin's lines, of a gyrostatic material structure which would possess the rotational elasticity characteristic of the æther, and at the same time contain such strain-centres. The conception of a medium of elastic solid type containing mobile discrete strain-centres is also touched upon, by way of illustration and contrast.

In the previous papers the relations of electromotive and optical phenomena in matter at rest had been developed on this basis. When the matter is considered as in motion through the æther, or when electric forces on matter are treated, we obtain a definite and sufficient basis of connection between matter and æther by assuming that the electrons are attached to the atoms of matter. On this basis the electric and optical relations of moving material media are here developed at length. The more speculative question, as to how far a constitution of the material atom which makes it consist wholly of a system of electrons describing orbits round each other suffices to represent or illustrate the properties of matter, comes under consideration in various respects: this hypothesis in many of its features would agree with the well-known theory of vortex atoms.

The theory of refraction equivalents is developed, leading to Lorentz's results. The theory of optical dispersion is treated from the generalised standpoint that the molecule vibrates about a configuration of steady motion instead of one of rest: it appears, also, that the formula usually given for the square of the refractive index must be replaced by a similar formula for the Lorentz refraction equivalent.

The character of the mechanical forces that are developed in fluid and solid material media by the electric attractions between the polarised molecules of which they are composed, is considered, and expressions are obtained for them. A distinction is here essential between those forces between neighbouring molecules which are compensated locally, and the ones which give rise to transmitted mechanical force which must be compensated by regular mechanical stress in the medium; somewhat in the manner of the corresponding distinction employed by Young and Poisson in the theory of capillarity. It leads, through the negation of the perpetual motion, to the specification of a function which is the *mechanical* or *organised* energy of the material medium: this is different from the *available* or *free* energy of thermodynamics, which is also represented by an analytical function on account of the negation of the unlimited availability of diffuse thermal energy: it is, of course, also different from the *total* or *aggregate* energy of the molecules of the medium, about which little can be known in detail. The theory of osmotic forces is formulated in relation to the available energy with which they are connected, as they are related to the individual molecules sifted by porous partitions and not to the element of matter in bulk: the known general laws of chemical equilibrium are formulated as corollaries to the same principle. On the other hand, the mechanical forces in a fluid molecular medium polarised in any manner are expressed in terms of the distribution of *mechanical* energy of polarisation. The doctrine of *energetics* (including the conception of temperature), which forms a sufficient basis for the descriptive explanation of the mechanics of statical or steady material systems, thus reposes on the negation of the two types of perpetual motion above mentioned, and therefore ultimately on the discrete constitution of matter.

A thermodynamic application which possesses interest, both from the light it throws on the nature of magnetism and from the circumstances that in it the heat supply is calculated indirectly from the magnetic energy that runs down, is the relation between magnetic susceptibility and temperature in substances not in the very susceptible or ferromagnetic condition. According to the Weberian theory, which fits in with the present view, diamagnetic energy which is not compensated mechanically goes to the induction of Amperean currents in the molecules; while paramagnetic energy not thus compensated goes to orientating the molecules, and thus into heat. It follows that the diamagnetic coefficient is independent of temperature: on the other hand, it is shown that the paramagnetic coefficient should vary inversely as the absolute temperature. These laws were discovered experimentally by Curie, who finds from a very extensive investigation that they have the same order of accuracy at sufficiently high temperatures as the ordinary gaseous laws: at lower temperatures and in ferromagnetic substances the control of the polarised molecules arises in appreciable part from the magnetic interaction of their neighbours, thus vitiating the law as well as introducing effects of hysteresis. The well-known model of Ewing would thus represent an ideal perfect ferromagnetic in which the control arises wholly from the latter cause.

In application of the previous results as to how far physical actions can be considered as transmitted across the æther by elastic stress, the conditions are formulated under which the correlative principle utilised by Poynting is valid, that the actual rate of change with time of the organised or mechanical energy within any region is expressible explicitly as a surface-integral over its boundary.

The mechanical effects of light-waves are reconsidered in the light of this molecular theory. The conclusion is reached that such effects are wholly associated with absorption of the radiation, that no influence of perfectly transparent media on radiation can provoke a mechanical reaction. There is a mechanical force acting on an absorbing mass, in the direction of the incident radiation and equal to $E(1 - m^{-2})$, where E is the energy absorbed per unit time and m is the real part of the index of refraction. Partial analogies are furnished by the mechanical effects of Hertzian radiation on a medium built up of conducting linear circuits, and of sound waves on a medium formed of a system of resonators.

As an application of the law of the mechanical forcive on dielectrics, the changes of dimensions of a condenser under electrification are considered. The problem is found to admit of exact solution if the condenser layer consists of a closed sheet, of any form, but of uniform thickness. In that case the mechanical stress in the material of the sheet proves to be simply of the type of the Faraday-Maxwell stress. The theory is compared with Quincke's experimental results: their main features are verified, including those which led Quincke to assign a wholly non-mechanical origin to the effect: but something less than half the change of volume remains over as an intrinsic electric deformation, not due to the transmitted mechanical forces.

Finally a series of practical illustrations of the mechanical theory are treated, some of which have already been employed for experimental measurement, and which are capable of still further application. The mechanical circumstances attending the refraction of uniform fields of electric force by fluid media are developed. The theory of various arrangements for measuring electric tractions and pressures in fluid dielectrics is worked out. The effect of an electric field on the velocity of ripples on the surface of a conducting or a dielectric fluid is determined: as also are the relations of electric polarisation to vapour tension and fluid equilibrium. The internal mechanical forces in a complete magnetic circuit are examined, and also the traction between the interfaces when it is divided: and the mode of calculation of the stress in a sphere of iron in a uniform magnetic field is indicated, agreeing for this case with Kirchhoff. The mutual influence of stress and magnetisation is analysed, with reference to the experimental investigations of Bidwell.

June 3.—"Mathematical Contributions to the Theory of Evolution. On the Relative Variation and Correlation in Civilised and Uncivilised Races." By Miss Alice Lee, Bedford College, and Karl Pearson, University College. Received April 9.

The numerical constants of this paper were calculated in the hope of reaching some general ideas on comparative variation and comparative correlation in the case of civilised and uncivilised races, and further of determining, if possible, any general law connecting relative sexual variation and relative sexual correlation with the degree of civilisation, and so, with what is probably inversely proportional to the degree of civilisation, namely, the intensity of natural selection.

The following two principles seem to flow from a study of variation in the organs of man:—[1]

(*a*) Civilised man is more variable than uncivilised man.

(*b*) There is a greater equality of variation for the two sexes in uncivilised than in civilised races. Civilised woman appears, on the whole, to be slightly more variable than civilised man.

Both these principles are in accordance with the intensity of the struggle for existence—and the amount, consequently, of natural selection—being greater for uncivilised than for civilised races, and, further, greater for men than for women in the latter races.

The problem of correlation is, however, of a less simple character. While the action of selection can be shown theoretically to reduce variation, it by no means follows that it reduces correlation. Indeed, selection may increase, decrease, or reverse correlation at the very same time as it is reducing variation. We have then the following problems to guide us in the treatment of actual statistics:—

(*a*) Is correlation more intense among civilised than among uncivilised races?

(*b*) How does the relative correlation of the sexes differ in civilised and uncivilised races?

(*c*) Is there any marked prepotency of either sex in the matter of correlation?

These are the problems which the present calculations were designed, not to definitely solve, but to illustrate.

Unfortunately, adequate measurements on living members of uncivilised races are not very numerous, nor for the purposes of correlation generally very satisfactory. Reasons are given in the paper why long bones form more suitable material than skulls, and the measurements made in France by Rollet, and on the Ainos in Japan by Koganei, are discussed at length.

The following results are suggested by a discussion of the measurements.

(1) Civilised man has progressed as a rule on primitive man in size, variation, and correlation.

(2) This progression can hardly be accounted for by increased selection (because of the increased variation), not by decreased selection (because it is inconsistent with the relative changes in male and female size). It might possibly be accounted for by decreased selection and improved physical conditions.

(3) Woman is more variable than man in civilised races.

(4) Woman is more highly correlated than man in civilised races.

(5) In uncivilised races the sexes are more nearly equal in the matter of size, variation, and correlation than in the case of civilised races.

(6) It is impossible to say that civilised woman is nearer to the primitive type than civilised man. While civilised man differs more from the primitive type than civilised woman, so far, probably, as absolute size is concerned, he has made only about half her progress in variation, and hardly any progress at all in correlation.

(7) The causes (*e g.*, lessening of selection) which tend to increase variation may also increase correlation. In other words, the intensity of the struggle for existence is not necessarily a measure of the intensity of correlation.

Mathematical Society, June 10.—Prof. Elliott, F.R.S., President, in the chair, and subsequently Major MacMahon, R.A., F.R.S., Vice-President.—Mr. W. W. Taylor gave, in some detail, a description of several models of the regular convex and star solids.—The following papers were communicated:—The calculus of equivalent statements (sixth paper), by H. MacColl; on the primitive substitution groups of degree fifteen, by Dr. G. A Miller; and a generalised form of the binomial theorem, by Rev. F. H. Jackson.

EDINBURGH.

Royal Society, June 7.—Prof. Geikie, F.R.S., in the chair.—Sir William Turner read a paper by Dr. Broom, South Africa, on the comparative anatomy of the mammalian organ of Jacobson.—Prof. C. G. Knott gave the concluding paper of the series on magnetic strains, for which the Council has awarded him the Keith Prize for 1893-95. His results may be summarised thus:—All the iron and steel tubes follow approximately the same law as regards their longitudinal dilatation in a longitudinal magnetic field. In moderate fields the dilatation is positive; but it is negative in higher fields. The maximum occurs in field 150 ± 50, according to the thickness of the walls—the thinner the wall, the lower the field corresponding to the maximum dilatation. The great diversity in the volume-changes within the cores shows that the transverse dilatations must be of such a value as to be in some cases less than half the longitudinal dilatation, sometimes greater. This is particularly true of the steel tubes. The behaviour of nickel is much simpler than that of iron. On the whole, the cubical dilatation is determined by the longitudinal dilatation, both being negative and more nearly alike in order of magnitude than in the case of iron. Excepting for the tubes of narrowest bore, the transverse dilatation is positive, and about $\frac{1}{4}$th or $\frac{1}{5}$th of the longitudinal dilatation. The change of volume of a mass of nickel turnings enclosed in a brass tube and placed in the magnetic field is much smaller than the volume-changes in the bores of the tubes. The cubical dilatation is always positive, and increases steadily from $1 \cdot 56 \times 10^{-8}$ in field 107, to $27 \cdot 4 \times 10^{-8}$ in field 570.—In a paper on the solution of equations connecting linear vector functions, Prof. Tait derived a general proposition regarding the commutativeness of strains, and noted connected questions.

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[1] See "Variation in Man and Woman," by K. Pearson: "The Chances of Death," vol. i. pp. 256-377, where some 155 cases of human variation for both sexes are dealt with.

—On the electrification of air by uranium and its compounds, by Dr. J. C. Beattie. Experiments were described to test the electric state of the air in the neighbourhood of metallic uranium, or of other metals on which a salt of uranium had been deposited, when these were charged to a positive or negative potential. The method adopted was the electric filter method of Kelvin, Maclean, Galt. It was found that the air drawn away from the negative electrode of a Ruhmkorff inductorium, or from the kathode of a Crookes' tube, or from the wire joining the negative electrode of the coil to the kathode of the tube, was always negatively electrified. On the other hand, the air drawn from the neighbourhood of the positive electrode of the coil, or from the anode of a Crookes' tube, or from the wire joining them, was found to be positively electrified. This positive electrification of the air was always less than the negative corresponding. With uranium insulated in a metal cylinder and connected to the terminal of a battery, while the cylinder and the other terminal were connected to the case of a quadrant electrometer, the air was electrified positively when the uranium was electrified positively, and negatively when the uranium was electrified negatively. With the metal cylinder insulated and joined to one terminal of the battery, while the uranium still inside the cylinder and the other battery terminal were connected to the electrometer case, it was found that the air was negatively electrified when the cylinder was positively electrified, and *vice versâ*. The negative electrification of the air was always less than the corresponding positive electrification. Both attained a maximum value when the difference of potential was between 10 and 20 volts per cm. of air space. The same results were obtained when metals were covered with salts of uranium and then charged to positive and negative potentials. Dr. Beattie also read a note on this subject by Lord Kelvin. The following is an abstract of the note:—The effective conductivity induced in the air by the uranium influence is, of course, greatest in the immediate neighbourhood of the uranium, but there is something of it throughout the enclosure. Hence it may be expected that electricity of the same kind as that of the uranium will be deposited in the air close around it, and electricity of the opposite kind in the air near the enclosing metal surface. And the quantity flowing from either the uranium or from the surrounding metal per sq. cm. of its surface increases but little with increased voltage when this exceeds 5 or 10 volts per sq. cm. Hence, if the dimensions and shapes of the uranium and of the surrounding metallic surface are such, that for small voltage, such as 10 or 20 volts, the electricity lodged in the air by discharge from the uranium preponderates over that discharged from the surrounding metal, the excess must come to a maximum and diminish, may be even down to zero, with greater and greater differences of potential; and at potential differences still greater the electricity lodged in the air from the outer metal may preponderate, and the electricity in the air drawn off and given to the filter be of opposite sign to that of the uranium which was found with the lower voltages. *Provided the configurations are such, and the voltages are so moderate that disruptive discharge does not intervene to any practically disturbing extent.*—On simple formulæ giving approximate values of the roots of the Bessel function of order n and its first derived function, in terms of the roots of (say) $J_2(x) = 0$, $J_3'(x) = 0$, (n even), or those of $J_3(x) = 0$, $J_4'(x) = 0$, (n odd), by Dr. W. Peddie. In this paper were given simple expressions by means of which the roots of $J_n(x) = 0$, $J'_{(n+1)}(x) = 0$ can be obtained when the roots of $J_\rho(x) = 0$, $J'_{(\rho+1)}(x) = 0$ are known ($\rho < n$). These expressions lend themselves readily to numerical calculation, and give values of the roots which become more and more nearly true as x increases. Even for the smaller roots, beyond the first two, the values found are highly approximate when $n - \rho$ is not too great.

Mathematical Society, June 11.—Mr. J. B. Clark, Vice-President, in the chair.—The following papers were read:—On superposition by the aid of dissection (continued), by Mr. R. F. Muirhead; on a method of studying displacement, by Mr. R. F. Muirhead; the isogonic centres of a triangle, by Dr. J. S. Mackay.

DUBLIN.

Royal Dublin Society, March 24.—Prof. E. Percival Wright in the chair.—A paper was presented by Mr. J. E. Duerden, of Kingston, Jamaica, on Jamaican Actiniaria (Part i. Zoantheæ), being communicated through Prof. A. C. Haddon.—Prof. W. J. Sollas, F.R.S., read a paper on an apparatus for submarine observation. Samples of new colours with metallic lustre, mosaics and pavement, lent by the Vitreous Mosaic Co., together with a collection of chemicals made by Harrington Bros. for the glass, china, and enamel industries. and for photography and electro-plating, were described by Prof. W. Noel Hartley, F.R.S.—Prof. E. J. McWeeney gave a demonstration of the bacillus of the bubonic plague.

April 21.—Prof. W. J. Sollas, F.R.S., in the chair.—On the possibility of boring and raising a portion of a coral reef from a great depth, and on an apparatus for demonstrating the folding of rocks due to lateral pressure, by Dr. J. Joly, F.R.S.—The formation of humus, its action in the nitrification of ammonium compounds, by Mr. W. E. Adeney.

May 19.—Prof. W. J. Sollas, F.R.S., in the chair.—Dr. J. Joly, F.R.S., read a paper on the volume change of rocks attending fusion.—Sir Howard Grubb, F.R.S., read some notes on a recent paper by Prof. Hale, of Chicago, respecting the relative merits of reflecting and refracting telescopes, (*a*) when used for visual work, (*b*) when used for photographic work.—Prof. D. J. Cunningham, F.R.S., made some observations on the Cape hunting dogs in the gardens of the Royal Zoological Society, Dublin.

PARIS.

Academy of Sciences, June 14.—M. A. Chatin in the chair.—Experimental verification of the theory of gradually varied flow in open channels, by M. J. Boussinesq.—Fossil forest of *Calamites Suckowii*. Specific identity of *Calamites Suckowii* (Br.), *Cistii* (Br.), *Schatzlarensis* (St.), *foliosus* (Gr.), *Calamocladus parallelinervis* (Gr.), and *Calamostachys vulgaris* (Gr.), by M. Grand 'Eury. In a fossil forest at Treuil, the remains consist almost entirely of *Cal. Suckowii*, of which *Cal. Cistii* formed the part above ground.—Application of the method of Poinsot to non-Euclidian statics, by M. J. Andrade.—Statics and the geometry of Lobatchefsky, by the same.—On the calculation of the resistance of the air to a disc for a velocity of twenty metres per second, by M. P. E. Touche.—On a propelling system for boats, by M. Y. Le Guen. — On the cosmic force curve, by M. Baraduc. — On isometric surfaces, by M. A. Pellet. — On small periodic movements of long-period systems, by M. P. Painlevé. — A mercury interrupter for large Ruhmkorff coils, by MM. E. Ducretet and L. Lejeune. The contact-breaker described, a figure of which is given, possesses the advantages of high speed, and certainty of break, without the danger of the alcohol igniting after long use. It admits of ready adjustment of speed.—On the dynamics of homogeneous chemical reactions, which take place with evolution or absorption of heat, by M. Michel Petrovitch.—Contribution to the history of the iodides of phosphorus, by M. A. Besson. Chemically pure PI_3 has been obtained by the action of dry HI upon PCl_3. It is completely decomposed by water without forming either free iodine or a solid deposit. The solution of PI_3 in carbon bisulphide is completely decolorised when shaken with an excess of mercury. The possible existence of an unstable P_3I_4 is also indicated, the existence of which gives a probable mechanism for the conversion of yellow into red phosphorus by iodine, the equations being $P_3I_4 = P_2I_4 + P$ (red), and $P_2I_4 + P$ (white) $= P_3I_4$.—On a method of oxidation and chlorination, by M. A. Villiers. The presence of a trace of a manganese salt accelerates many oxidations, as, for example, that of oxalic acid by a mixture of hydrochloric and nitric acids. This action is comparable with that of a ferment, and is of importance in vegetable physiology.—Breaking up of the fundamental band of chlorophyll, by M. A. Étard. By reducing the concentration of a carbon bisulphide solution of chlorophyll derived from *Lolium perenne*, the large band 729–635 splits up into three. This method of dilution, together with the superposition of two spectra in the same field, serves to show minute differences existing between chlorophylls derived from various sources.—On the oxidising action of manganous salts and on the chemical constitution of the oxydases, by M. Gab. Bertrand. The salts of manganese act as oxygen carriers to many organic compounds. The results are given of the action of various manganous salts upon hydroquinone in presence of air, and the theory is developed that these salts are partially hydrolysed into free acid and manganous oxide, that the latter takes one atom of oxygen forming MnO_2, and that the organic compound is oxidised by the remaining half molecule of oxygen.—Action of nickel upon ethylene. Synthesis of ethane, by MM.

Paul Sabatier and **J. B. Senderens**.—On isolauronolic acid, by **M. G. Blanc**.—Action of acetylene upon silver nitrate, by **M. R. Chavastelon**. According to the conditions of the experiment, either $C_2Ag_2.AgNO_3$, or C_2Ag_2 is formed.—Determination of resin oil in essence of turpentine, by M. A. Aignan. A portion of the oil is distilled and the rotatory power of the residue measured. It is notably reduced if the oil is adulterated.—On the active principles of some arums, by Mlle. J. Chauliaguet, MM. A. Hébert and F. Heim.—Action of albumoses and peptones in intravascular injections, by M. E. Fiquet.—On the relation of certain layers of lead carbonate to caves and ancient beds of subterranean rivers, by M. De Launay.—The characteristics of Broxburn oil shale, by M. C. E. Bertrand.—Classification and phyllogeny of the Goniatites, by M. Émile Haug.—On the Diceratineæ of the Tithonic beds in the Cevennes, by MM. V. Paquier and F. Roman.—On the Cueva del Drach (Dragon's Cave) in the Island of Majorca, by M. E A. Martel. This cave is in the Miocene limestone, and is the largest known in tertiary strata. It contains a subterranean lake 177 metres long, and from 4 to 9 metres deep.—Action of the X-rays upon the retina, by M. G. Bardet. The rays produce upon the retina a luminous impression which, although very faint, is quite clear.—Remarks by M. d'Arsonval on the preceding paper.—On the constitution of the large sympathetic nerve; its trophic centres, by M. J. P. Morat.—Experiments on the stimulation of nerves by the electric rays, by M. B. Danilewsky.—On a very grave case of dermatitis following two applications of the X-rays, by M. G. Apostoli.—Local therapeutic action of high frequency currents, by M. Oudin.—The saprophytic form of human and fowl tuberculosis, by MM. Bataillon and Terre.—On the influence of the hypnotic sleep upon the gastralgia of the dorsal tubes, by M. Ed. Spalikowski.—On the results of meteorological observations made in Marchuria and in the neighbouring countries, by M. Michel Venukoff.—On the variation of the surface temperature in soils of different natures, by M. Joseph Jaubert.

NEW SOUTH WALES.

Linnean Society, April 28.—Prof. J. T. Wilson, President, in the chair.—On the fertilisation of *Eupomatia laurina*, by Alex. G. Hamilton. Fertilisation appears to be effected by a small Curculio (an undescribed species of *Elleschodes*, specimens of which are now in the hands of the Rev. T. Blackburn for description), myriads of which, attracted by the scent of the newly-opened flowers, crowd the blossoms to the exclusion of other insects. They feed on the staminodes, eating their way into the heart of the flower. Microscopic examination of individual beetles taken at random showed that the antennæ, tarsi and other parts were coated with pollen. Robert Brown conjectured what happened, but did not see the beetles. Dr. Harvey saw the latter, but he appears not to have published any particulars.—Descriptions of the nests and eggs of three species of Australian birds, by Alfred J. North. Descriptions were given of the eggs of *Cracticus rufescens*, De Vis, from the Herbert River, Q.; *Sphenura broadbenti*, McCoy, from the Otway Forest, Victoria; and *Dendrocygna eytoni*, Gould, from the Macquarie River, N.S.W.—On some new or little-known Australian fishes, by J. Douglas Ogilby. Two new genera were characterised, and ten species of fishes were described as new.—On the development of the Port Jackson shark (*Heterodontus Phillipi*), Part i. early stages, by Dr. W. A. Haswell, Challis Professor of Biology, Sydney University. The hope is not unreasonably sanguine that the embryonic development of a type so ancient as *Cestracion* (*Heterodontus*) might exhibit some important primitive features. With regard to the stages now described, however, any expectations of this kind cannot be said to have been fulfilled; and what impresses one most in the results is the extraordinary persistency of certain characteristics which are not known to have any vital significance. There can be little doubt, for example, that the orange spot, which forms such a striking feature of the egg of an Elasmobranch in its early stages, has been handed down with but little change from Palæozoic times.—Description of a new Helix, by C. E. Beddome. The new species is near *H. mossmani*, Brazier, in its markings, but differs in being umbilicated and white-lipped. *Hab.*, Yeppon, near Rockhampton, Q.—Descriptions of new species of Australian Land Planarians: with notes on collecting and preserving, by Thomas Steel. Seven species of *Geoplana* from New South Wales and Queensland were described as new.—Descriptions of new species of Fijian Land Planarians, by Thomas Steel. One species of *Geoplana* and one of *Rhynchodemus* were described as new; and *Bipalium kewense*, Moseley, was recorded as common under logs on the Navua River, Viti Levu. Mr. Steel exhibited a fine collection of well-preserved and displayed Land Planarians, representing the species described in his paper, and illustrating the modes of preservation and the results after the use of the various preservative media advocated therein. Mr. Steel also contributed the following note on *Peripatus*. "I desire to place on record the occurrence in New South Wales of *P. oviparus*, Dendy, the Victorian form of *Peripatus*. While collecting in January of this year, between Exeter and Bundanoon (Moss Vale District), on turning over a log, I noticed a *Peripatus* which, from its attitude and general appearance, specially attracted my attention. This proved to be a female specimen of the above species, and, so far as I am aware, this is the first occasion on which its occurrence in this colony has been definitely recorded. The lozenge-shaped pattern which characterises most of the specimens found in Victoria is well displayed; and the fact of the ovipositor being fully extruded in the specimen, which I now exhibit, is sufficient guarantee of its identity. When visiting the Australian Museum a few days ago, I had an opportunity of examining the specimens of *Peripatus* preserved there, and I was interested in noticing that those collected by Mr. Helms, in 1889, at Mount Kosciusko belong to the same species. All of the females in the Museum collection from that locality, which I examined, have the ovipositor plainly visible, and in many of them it is fully extruded."

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